

## CALIBRATION CERTIFICATE

**Instrument** GMP343 Carbon dioxide probe  
**Serial number** N2220008  
**Manufacturer** Vaisala Oyj, Finland  
**Calibration date** 31st May 2017

The carbon dioxide probe was calibrated against accurate bottled nitrogen and carbon dioxide gas concentrations. High purity nitrogen gas was used for calibrating the zero value of the probe. For the CO<sub>2</sub> calibration, an accurate mixture of nitrogen and carbon dioxide traceable to VSL (Dutch Metrology Institute) was used.

Pressure and temperature compensation was made by using the compensation algorithm of the probe. The ambient pressure value was obtained from a Vaisala pressure transmitter, and the gas temperature was measured by the built-in temperature sensor of the probe. The temperature sensor of the probe was calibrated against the gas temperature sensor of the calibration system. At the time of shipment, the probe met its operating specifications.

The pressure transmitter and the gas temperature sensors have been calibrated at ISO/IEC 17025 accredited calibration laboratory (FINAS), MSL by using working standards traceable to the National Institute of Standards and Technology (NIST).

**Calibration results (for measurement range 0...1000 ppm)**

Reference ppm CO <sub>2</sub>	Observed* ppm CO <sub>2</sub>	Difference ppm CO <sub>2</sub>	Permissible difference ppm CO <sub>2</sub>	Calibration gas temperature °C	Ambient pressure hPa
0	1	1	± 3	26.4	1004.6
200	201	1	± 5	26.4	1004.7
371	373	2	± 6	26.4	1004.9
600	601	1	± 9	26.4	1005.0
1000	1007	7	± 13	26.4	1005.1

\*Reading after pressure and temperature compensation.

**Ambient conditions** / Humidity 17 ± 5 %RH, Temperature 25.0 ± 1 °C.

**Equipment used in calibration**

Type	Serial number	Calibration date	Certificate number
34970A	MY41021619	2017-03-15	1250-307082540
Pt-100 Sensor		2017-05-10	A00978

**Gas cylinders used in calibration**

Type	CO <sub>2</sub> concentration (ppm)	Cylinder number	Reference number
Scientific nitrogen (N6.0)	0	7525010202439	100396693
Carbon dioxide mixture (± 0.5 %)	200	7520080002415	100443691
Carbon dioxide mixture (± 0.5 %)	371	7523112125581	100458390
Carbon dioxide mixture (± 0.5 %)	600	7523112099553	100458931
Carbon dioxide mixture (± 0.5 %)	1000	7523610208596	100430081

*[Handwritten signature]*

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Technician

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